

BENCHMARKS

VOLUME 5 NUMBER 2

NORTH TEXAS STATE UNIVERSITY

APRIL, 1984

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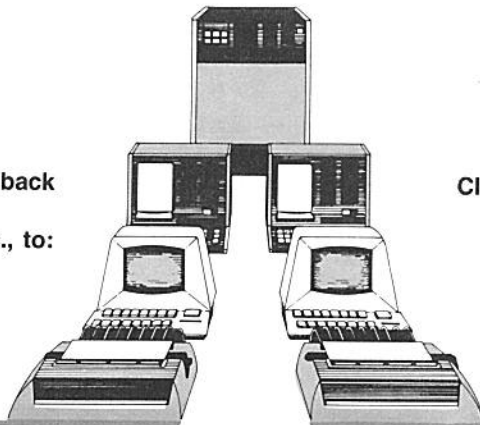
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BENCHMARKS Reader/User feedback is encouraged.

Send all letters, suggestions, etc., to:
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VAX 11/780 VMS OPERATING SYSTEM PROBLEMS - Kim Stickney

HP-2000 OPERATING SYSTEM PROBLEMS - Jeff Brooks

ADMINISTRATIVE APPLICATIONS - Coy Hoggard

NAS 8040 BILLING PROBLEMS - Sandy Franklin

JOB SUBMISSION & RETRIEVAL - RJE Operators

Spring Computing Hours

Computing facilities will be open during the following hours throughout the Spring Semester (not applicable to holidays):

Computing Center RJE:	7 a.m. Monday - Midnight Saturday Noon - Midnight Sunday
ISB 110 Terminal Area:	Monday - Thursday, 7:30 a.m. - Midnight Friday, 7:30 a.m. - 6 p.m. Saturday, 8:30 a.m. - 7 p.m. Sunday, 2 p.m. - 10 p.m.
College of Business:	Monday - Saturday, 8:15 - Midnight Sunday, 12:15 p.m. - Midnight
Room 550, GAB:	Monday - Thursday, 8 a.m. - Midnight Friday, 8 a.m. - 10 p.m. Saturday, Noon - 8 p.m. Sunday, 2 p.m. - Midnight

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*   N E W   P O L I C I E S   &   P R O C E D U R E S   *
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New User Friendly Menu Facility Available

MUSIC now has a menu-driven utility with which to gain access to the various utilities available here. The advantage of using the menu facility is that you need not remember the names of all the programs that you might wish to use (but you must remember the name 'MENU'). To access the menu, type the command MENU from the *GO mode of MUSIC. A typical session would look like this:

```

*GO
menu <RETURN>
*IN PROGRESS

```

```

*---N T S U   MUSIC UTILITIES---*

```

-UTILITY NAME-	*-FUNCTION-*
1 MAPDISK	Get a listing of your OS Datasets.
2 WATERLOO	Generate Waterloo Script Manuals.
3 #EXCHANGE	Move music files to/from OS & Tape.
4 PTPCH	Print the contents of a MUSIC file.
5 #FILEDELETE	Delete a Range of MUSIC files.
6 CHANGEPW	Change your MVS OS/BATCH Password.
7 EXIT	Leave this Utility.

Enter the number of the Menu which you wish to view.

Entering a 1, for example would put you into the MAPDISK utility, just as if you had entered the command MAPDISK. We plan to expand the MENU feature to make the use of MUSIC as user-friendly as possible. Suggestions for enhancements to MENU are welcome. Send them to SYSTEM on the MUSIC MAIL system (type HELP MAIL from the *GO mode of MUSIC for details), or through campus mail.

Index Change for BENCHMARKS

By popular decree, the index for issues of this newsletter will no longer be printed at the end of each issue. Instead, a summary index will be printed on a semesterly basis.

Additional Memory Added to NAS/8040

On Sunday, April 15, four additional megabytes of main memory were added to the NAS/8040 computer, bringing the total capacity to twelve megabytes. This enhancement seems to have caused immediate improvements in MUSIC response time and OS/MVS batch turnaround time. As these operating systems are tuned, we can look forward to even greater improvements.

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*   O P E R A T I O N S   *
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Computing Hours Between Semesters

The following hours will be in effect between semesters (May 12 - June 6):

Computing Center RJE: OPEN: Monday - Friday, 8 a.m.-midnight
CLOSED: All day Sundays

ISB 110 Terminal Area: OPEN: Monday - Friday, 8 a.m. - 5 p.m.
Saturday, 5/12, 8:30 a.m. - 7 p.m.

College of Business: CLOSES: 8 p.m. Friday, May 11
REOPENS: 8 a.m. Wednesday, June 6

Room 550, GAB: CLOSES: 10 p.m. Friday, May 11
REOPENS: 8 a.m. Wednesday, June 6

Backup Schedule for OS/MVS

OS/MVS disk packs (academic and administrative) are backed up daily, Tuesday through Saturday, from 4-6:30 a.m., and Sunday from Midnight to 3 a.m. A backup of all the operating systems and their contents is done once every two weeks at some low activity period over a weekend.

NAS/8040 Performance Statistics for March

SYSTEM	SCHEDULED OPERATING HOURS	PLANNED MAINT. HOURS	PLANNED PRODUCTION HOURS	UNPLANNED MAINT. HOURS	PRODUCTION HOURS ACHIEVED	SYSTEM UPTIME
VM/SP2	744	0.00	744.00	4.03	739.97	99.5%
MUSIC	744	20.02	723.98	9.58	714.40	98.7%
MVS/JES2	744	0.00	744.00	9.74	734.26	98.7%
COMPLETEA	744	2.08	741.92	13.18	728.24	98.2%

CPU availability equals approximately 100% uptime.

System Uptime=(Production Hrs Achieved)/(Planned Production Hrs)
Production Hrs Achieved = (Planned Production)-(Unplanned Maint.)
Scheduled Operating Hrs = (Planned Maint.) + (Planned Production)
MUSIC Planned Maintenance Hours include 20.02 hrs system backup.

Lost productivity is calculated as the greatest amount of elapsed time that any one of the production systems was unavailable for scheduled operation. Lost productivity hours were contributed to by the following key causes:

1. NAS 7350 Disk Failure	.50 hours
2. IBM 3272 Terminal Control Unit Failure	5.15
3. MVS/JES2 System Tuning and Improvements	.83
4. COMPLETEA Program Tuning and Improvements	.15
5. MUSIC System Tuning and Improvements	1.13
6. VM/SP2 System Tuning and Improvements	2.23
7. 7360 Disk Reconfiguration for System Tuning	2.58
8. System Restarts for Undetermined Causes	2.86

TOTAL	15.43 hours

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*           *
*   A C A D E M I C   *
*   C O M P U T I N G   *
*           *
* * * * *

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Purging of Academic Disk Volumes

If you have not changed the names of your data sets to comply with the new naming convention, please do so before this semester ends. All data sets not in compliance are subject to purging at the end of the semester. The new naming convention is of the form:

USER.IDnn.filename

where: USER. - must appear
 IDnn - is your User ID
 . - must appear
 filename - is one or more optional fields (each of which may not exceed 8 characters) separated by periods.

Explaining BMDP2T

The following article is reprinted, with permission, from BMDP Statistical Software Communications, Vol. 16, No. 4, December, 1983.

Several users have inquired about the functional form of the time series model generated by the BMDP instructions for 2T. It is occasionally difficult for the user to duplicate textbook examples, particularly when an intervention variable or transfer function is involved. Here we demonstrate how to translate the model notation of a frequently used time series textbook, Applied Time Series Analysis for the Social Sciences (McCleary and Hay, 1980), into BMDP instructions.

The functional form of the time series model with one transfer function or intervention variable is written as follows:

$$B_{\text{arima}}(y_t - M_{\text{arima}}) = (x_t^U \text{ inde } B_{\text{inde}} / S_{\text{inde}}) + (\Theta_{\text{arima}} a_t + T_{\text{arima}}) / \phi_{\text{arima}}$$

where subscripts arima and inde indicate the paragraph (ARIMA or INDEPENDENT) in which the component is specified. Y represents the output variable; x the intervention or transfer function variable; and a the input variable (noise).

The table below gives the expansion of each component of the model, along with the BMDP instructions that generate it.

COMPONENT NAMES	COMPONENT	EXPANDED POLYNOMIAL	BMDP INSTRUCTIONS
ARIMA			
Difference	B	$(1-B^{d_1})(1-B^{d_2})\dots$	DFORDER=d ₁ ,d ₂
Autoregressive	ϕ	$(1-\phi_{11}B^{d_{11}}-\phi_{12}B^{d_{12}})\dots$	ARORDER='(d ₁₁ ,d ₁₂)'
Moving Average	θ	$(1-\theta_{11}B^{d_{11}}-\theta_{12}B^{d_{12}})\dots$	MAORDER='(d ₁₁ ,d ₁₂)'
Mean	M	Y	CONSTANT.
Trend	T	T	CONSTANT.
INDEPENDENT			
Difference	B	$(1-B^{d_1})(1-B^{d_2})\dots$	DFORDER=d ₁ ,d ₂
U-polynomial	U	$(U_{11}B^{d_{11}}+U_{12}B^{d_{12}}+\dots)$	UPORDER='(d ₁₁ ,d ₁₂)'
S-polynomial	S	$(1-S_{11}B^{d_{11}}-S_{12}B^{d_{12}})\dots$	SPORDER='(d ₁₁ ,d ₁₂)'

The simplest way to translate a time series model into BMDP instructions is to put it first into BMDP's functional form. To illustrate this, we use an example on page 166 of the McCleary and Hay (1980) text. They specify the following model:

$$Y = \frac{\omega_0}{1 - \delta_1 B} (1-B)I_{121} + \frac{\theta_0 + (1-\theta_1 B)(1-\theta_{12} B^{12})}{(1-B)(1-B^{12})} a_t \quad (1)$$

To convert this model to BMDP functional form, we multiply the model by the differencing polynomial in the ARIMA paragraph, $(1-B)(1-B^{12})$ in this case, yielding

$$(1-B)(1-B^{12})Y_t = \frac{\omega_0(1-B)(1-B)(1-B^{12})I_{121}}{1 - \delta_1 B} + \theta_0 + (1-\theta_1 B)(1-\theta_{12} B^{12})a_t \quad (2)$$

McCleary and Hay use "I" to denote the intervention or transfer function variable and "a" to denote the input variable. We can now go through equation (2) and compare it term by term with the BMDP functional form to obtain the appropriate BMDP instructions. The differencing and mean components on the left side of the equation are specified in the ARIMA paragraph. The model has no mean component. The moving average, trend, and autoregressive components found in the second term on the right side of the equation are also specified in the ARIMA paragraph. This model

has no autoregressive component. The trend component is specified as a moving average component of order zero Θ_0 , rather than T. To request this in BMDP, state CONSTANT. The ARIMA paragraph for this model is

```
ARIMA      VARIABLE = Y.
           DFORDERS = 1,12.
           MAORDERS = '(1),(12)'.
           CONSTANT. /
```

The INDEPENDENT paragraph is described by the first term on the right side of the model. McCleary and Hay denote U (the U-polynomial) as ω and S (the S-polynomial) as δ . We see that the INDEPENDENT term has differencing, U- and S-polynomials. The BMDP instructions for this paragraph would be

```
INDEPENDENT VARIABLE = I.
            DFORDERS = 1,1,12.
            UPORDERS = '(0)'.
            SPORDERS = '(1)'.
            TYPE = BINARY. /
```

Note that if we had attempted to translate equation 1 into BMDP instructions without converting in to equation 2, we might have misstated the DFORDERS sentence.

The CONSTANT option in the ARIMA paragraph deserves some further explanation. In the absence of the difference polynomial (B), stating CONSTANT produces the mean parameter (M), to be evaluated conditionally in estimation. In the presence of a difference polynomial, where a mean parameter has no influence on the overall model, stating CONSTANT produces the trend parameter, T.

Prior to the 1983 release of 2T, the user could specify either CONSTANT or CONSTANT = (starting value). The 1983 release will allow only the form CONSTANT. The starting value for estimation will be determined internally.

The CENTERED option is often confused with CONSTANT. CENTERED does not produce a model parameter (as does CONSTANT), but rather instructs 2T to work on the series translated by its average value. CENTERED is ignored for models with difference polynomials, since it has no influence on integrated models.

REFERENCE: McCleary, R. and R. A. Hay, Jr. (1980). Applied Time Series Analysis for the Social Sciences. Beverly Hills, Sage Publications.

SAS Touted in April COMPUTERWORLD

The April 2, 1984 issue of COMPUTERWORLD is chock full of articles praising the capabilities of SAS Institute Inc.'s line of SAS software products. These articles are interesting and worth looking at because they approach SAS from the standpoint of industry rather than academia. One can get a feel for the

many applications SAS can handle of a non-statistical nature.

Mohamad Salahshoor Resigns

Mohamad Salahshoor, longtime MUSIC Timeshare coordinator, and the Svstems programmer responsible for the functioning of the MUSIC operating system during the last several months, has resigned his position at NTSU to work in the private sector. His new place of employment is Univeristy Computing Company (UCC) in Dallas. He will be missed by one and all. Steve Glick has been the MUSIC Timeshare Coordinator for the past few months.

Research Programmer Needed

The Computing Center invites applications for the position of Research Programmer. This is a full-time professional position which involves consulting with faculty and graduate students on a variety of computer applications, as well as programming tasks within the Computing Center. An excellent command of both written and oral English is required. Applicants should possess skills in a combination of two or more of the following areas: research design, data analysis, multivariate statistics, statististical software; high-level language programming, especially FORTRAN, COBOL, OS/MVS JCL and/or PL/I; assembly language programming, especially 8080/86/88 and/or System 370. A bachelor's degree is required; advanced degree preferred. For further information, contact the Personnel Office, North Texas State University.

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*   C O M M U N I C A T I O N S   *
*
* * * * *

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Dialing Up NTSU Computers Over the Telephone

Phone numbers for the local area network are:

```

(817) 565 - 3499
              3899
              3966
              3989
              3999
              4025
              4030
D/FW METRO 429 - 6006

```

All the numbers EXCEPT 565-4030 are for 300 baud communications. The 565-4030 number will accept either 1200 or 300 baud communications. It has an autobaud feature that requires the user to hit the <RETURN> key repeatedly until the receiving modem can determine the appropriate baud rate. After a communications link has been successfully established, the user will receive the

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prompt. At this point, it will be necessary to issue the appropriate CALL command to connect with a computer.

CALL 8040 will connect with MUSIC
 CALL 8300 will connect with MUSIC at 300 baud
 CALL 3270 will connect with MUSIC through the 3270
 protocol converter
 CALL A780 will connect with VAX system A
 CALL B780 will connect with VAX system B
 CALL 2000 will connect with the HP-2000 computer

Dial-Up Communications Problems

Like all pieces of mechanical equipment, the modems that receive communications over the phone lines occasionally break. In addition, modems seem to be particularly susceptible to the rule that "if one piece of equipment malfunctions, all other pieces will malfunction." This may mean that you will be unable to dial in on a particular phone line. Symptoms of this problem could include 1) no answer; 2) a busy signal; 3) an answer, but no communications. Your response to these situations should be to hang up, and try another phone number. We try to keep all the modems in working condition, but there are currently 40 of them, and we are finding it difficult to keep them all working simultaneously. We are in the process of replacing the more unreliable modems with new ones from a different vendor. In the meantime, if at first you don't succeed, try another number.

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*   M U S I C   *
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MUSIC Backup Hours

A message will be sent to all users signed on to MUSIC approximately 10 minutes before backups are begun. It will be in the form * * MUSIC SHUT DOWN AT xxxx AM - SCHEDULED BACKUP *. To find out the backup hours while signed on to MUSIC, enter HELP HOURS. The following backup schedule is currently in effect:

Tuesday	3 a.m. (for about 3 hours)	Weekly backup
Wednesday - Saturday	4 a.m. (for about 2 hours)	Daily backup
Saturday	Midnight (for about 2 hours)	Daily backup

MUSIC Release 5.2 is Coming

Release 5.2 of MUSIC is scheduled to be installed Sunday, May 20. In consequence, MUSIC will be unavailable from midnight Saturday, May 19, until 6 a.m. on Sunday. New features of MUSIC 5.2 include enhanced editor capabilities for 3270 terminals, and several new versions of languages, including Pascal III, VSCOBOL, and PL/I 4.0.

MUSIC Class ID Codes to be Deleted

All MUSIC class ids (id codes greater than JA00) will be deleted from the system on Monday, May 14. If you require files to be saved beyond this date, you must apply for an individual MUSIC id code IMMEDIATELY, so that your files may be transferred. The Computing Center takes an EXTREMELY dim view of users who request that files be restored after they have been deleted.

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*           *
*   V A X   *
*           *
* * * * *

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VAX Backup Schedule

Incremental backups of both VAX systems are performed Monday through Thursday at 5 p.m. Any files that have been created or changed are backed up. Users do not have to log out, but any files that are open at the time of the backup will NOT be backed up.

Full backups of both systems are done every Friday at 5 p.m. Again, users do not have to log out, but any files that are open will NOT be backed up.

A "stand alone" backup of both systems is done on the last working day of the month. During this time, all system software, as well as user files, are backed up. The systems must be taken down for this backup, which will usually not last more than 1/2 hour. All users that are logged on will be warned of the impending backup, and must log out.

NOTE: No backups are taken on the weekends. Requests for restoration of files should be made via MAIL to the username OP00.

Preventive Maintenance

We have worked out an informal arrangement with DEC Field Service to make the preventive maintenance on the VAX computers more predictable. In general, preventive maintenance will take place on the third Tuesday of every month. The Research VAX will be serviced at about noon, VAX System A will be serviced at about 2 p.m., and VAX System B will be serviced at about 4 p.m. The systems must be taken down for this service, and will be unavailable for users. Due to the vagaries of human nature, this schedule is not 100% reliable, but should allow users and the Computing Center some capacity for planning ahead.

Using EDT with the Televideo 970 Keyboard

by Kim Stickney

The most popular editor on the VAX/VMS computer systems is EDT, which has a screen mode that makes it easy to view the document

being worked on. This editor requires a terminal which is compatible with the VT52 and VT100 terminal types established by the Digital Equipment Corporation, makers of the VAX hardware, the VMS operating system, and the EDT editor. Since NTSU has no actual VT52 or VT100 terminals in the public terminal areas, users must become acquainted with various terminal emulators, that is, terminals which purport to behave like a VT52 or a VT100. This is reasonably straightforward in the case of MIME-2A (VT52 emulator) and MICROTERM 740 (VT100 emulator) terminals. The Televideo 970, however, is a particularly confusing case of a VT100 emulator, particularly with regard to the keypad on the right side of the keyboard. The following diagram shows how the EDT editor functions map into the bizarre 970 keypad. Use this guide whenever there is any confusion about how to run EDT on a Televideo 970 terminal. You should, of course, be familiar with the editor by having run the EDTCAI computer instruction course.

EDT TELEVIDEO 970 KEYPAD

GOLD	HELP	FNDNXT FIND	DEL L UND L	
	PAGE COMMAND	SECT FILL	APPEND REPLACE	DEL W UND W
	ADVANCE BOTTOM	BACKUP TOP	CUT PASTE	DEL C UND C
	WORD CHNGCASE	EOL DEL EOL	CHAR SPECINS	ENTER
LINE			SELECT	SUBS
OPEN LINE				

BACKSPACE
DELETE
LINEFEED
CTRL/A
CTRL/D
CTRL/E
CTRL/K
CTRL/T
CTRL/U
CTRL/W
CTRL/Z

Go to beginning of line
Delete character
Delete to start of word
Compute tab level
Decrease tab level
Increase tab level
Define key
Adjust tabs
Delete to start of line
Refresh screen
Return to line mode

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*   M I C R O S
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Disk Drive Head Failures on the Texas Instruments PC

by Jim Curry, CSCI Micro Maintenance Shop

The Microcomputer Maintenance Shop (MMS) has observed numerous disk head failures this semester. We have traced the problem to the method employed by the majority of users for opening the disk drive doors. This technical bulletin explains the problem and suggests a procedural solution to what could easily become an expensive, University-wide problem.

To understand the nature of the problem you must first understand a little about the structure of the disk drive. There are two Read/Write Head Assemblies in each drive, one above and one below the diskette. The head below the diskette is rigidly fixed in place and is the source of very few problems. However, the top head must be movable so that the diskette can be inserted and removed without physical contact with the head which would abrade the surface of the disk. The top Head Assembly is mounted on a rather delicate spring mechanism. The Head Alignment is quite easily destroyed by sudden impact of the Head Assembly against the top limits of the Drive Housing.

To determine if you may be heading (no pun intended) for unnecessary drive failures, please take the following quiz:

1. Do you open the drive door with your finger USING A PULLING ACTION?
2. Do you hear a loud snap or pop (but no crackle) when you open the door?
3. Does your diskette ever bend or bind when inserted?

If you answer YES to any of these questions, then you are on the road to the destruction of the top Head Assembly and TOTAL DATA LOSS. The cost to repair a drive abused in this manner starts at \$150.00.

We at MMS believe that the following preventive measures will minimize this kind of unnecessary failure:

1. Never open the drive door with a pulling action of the finger hooked underneath the drive door.
2. Always PUSH the drive door open, pushing with your index finger or thumb at the top of the door.
3. Attach a label with the word PUSH on it to the top of the drive door to help remind you of the proper place to push.
4. Never force a diskette into a drive that sticks. Call the MMS.
5. Speak up if you hear the tell-tale sound of a drive door

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being snap-popped open.

6. Post this bulletin in plain sight of your TIPC.

Remember--the MMS is here to minimize your Down Time and Hardware Frustration. Please don't hesitate to call us for any problem, and please help us to minimize YOUR problems.

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*
*   H P - 2 0 0 0
*
* * * * *

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HP-2000 Backup Schedule

Routine system backups are scheduled to be performed:

- 8 a.m. Monday through Friday for approximately 20 minutes;
4 p.m. Friday for approximately 1.5 hours.

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*
*   A D M I N I S T R A T I V E
*   C O M P U T I N G
*
* * * * *

```

NAS/6650 Performance Statistics for March

SYSTEM	SCHEDULED OPERATING HOURS	PLANNED MAINT. HOURS	PLANNED PRODUCTION HOURS	UNPLANNED MAINT. HOURS	PRODUCTION HOURS ACHIEVED	SYSTEM UPTIME
MVS/JES2	744	0.00	744.00	3.06	740.94	99.6%
COMPLETEA	224	0.00	224.00	7.49	216.51	96.7%
ADABASA	288	0.00	288.00	3.08	284.92	98.9%

CPU availability equals approximately 100% uptime.
Please see the NAS/8040 performance summary, above, for an explanation of cell entries.

Lost productivity is calculated as the greatest amount of elapsed time that any one of the production systems was unavailable for scheduled operation. Lost productivity hours were contributed to by the following key causes:

- | | |
|--|------|
| 1. IBM 3272 Terminal Control Unit Failure | .93 |
| 2. MVS/JES2 System Tuning and Improvements | 1.64 |
| 3. COMPLETEA Program Failures | 5.13 |
| 4. ADABASA Program Failures | .33 |
| 5. 7360 Disk Reconfiguration for System Tuning | 1.66 |
| 6. System Restarts for Undetermined Causes | .50 |

TOTAL 10.19 hours

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GET A SUBSCRIPTION TO BENCHMARKS

BENCHMARKS is a vital link between the NTSU Computing Center and the users of our facilities. It is important that all users of the computing facilities maintain a file of these newsletters because they contain materials which will periodically update existing documents as well as information and suggestions on uses of OS/MVS, MUSIC, the VAX 11/780s, the HP-2000, and other resources available to NTSU students, faculty and staff. To facilitate the dispersal of BENCHMARKS, *** FREE *** subscriptions are now available. To receive yours, send the following information to us:

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MAILING ADDRESS: _____

Please give a campus address (not a P.O. box) if possible--it's cheaper!

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